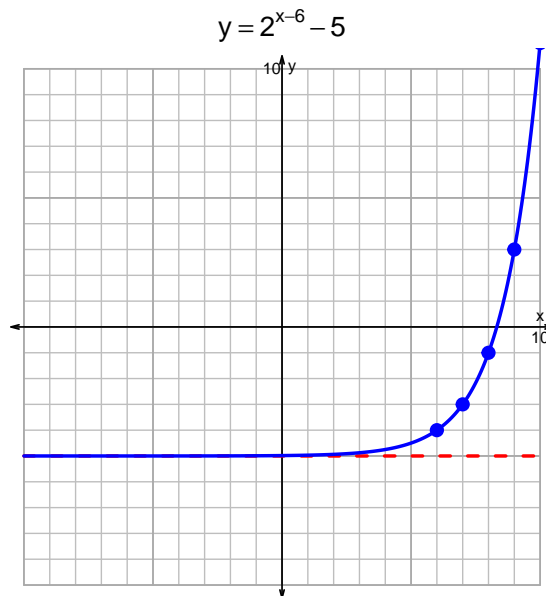
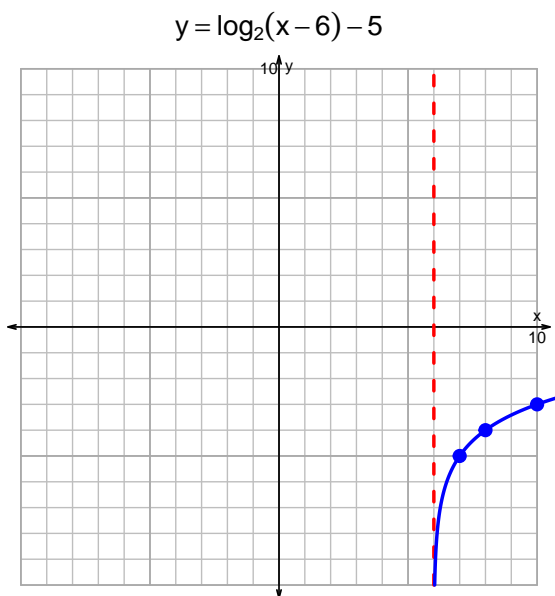


Name: \_\_\_\_\_

Date: \_\_\_\_\_

s18QUIZ: EXP LOG (SOLUTION v8)

1. Graph  $y = \log_2(x - 6) - 5$  and  $y = 2^{x-6} - 5$  on the grids below. Also, draw any asymptotes with dotted lines.



2. Write (but do not evaluate) the solution to the equation below by writing a logarithmic expression.

$$19 = \left(\frac{4}{5}\right) \cdot 2^{3t/7}$$

Divide both sides by  $\frac{4}{5}$ .

$$\frac{19 \cdot 5}{4} = 2^{3t/7}$$

Take log, base 2, of both sides.

$$\log_2 \left( \frac{19 \cdot 5}{4} \right) = \frac{3t}{7}$$

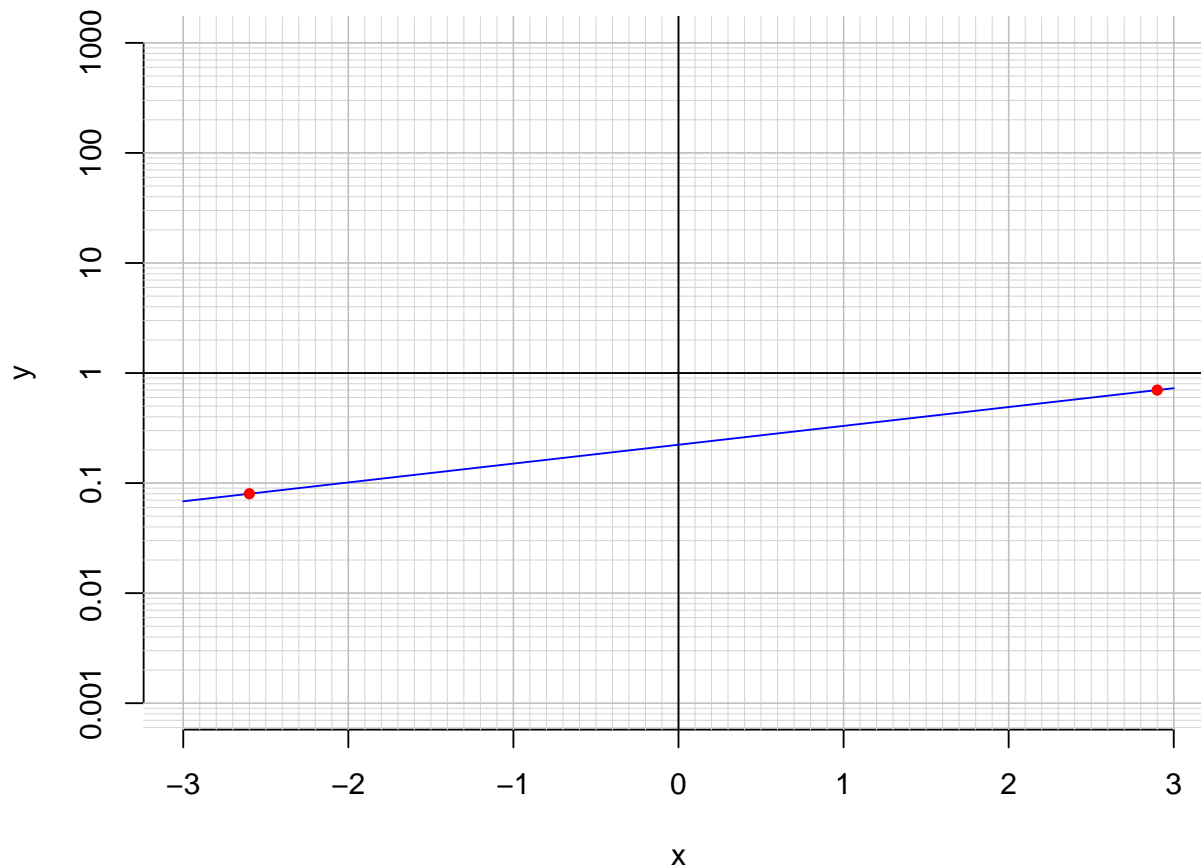
Divide both sides by  $\frac{3}{7}$ .

$$\frac{7}{3} \cdot \log_2 \left( \frac{19 \cdot 5}{4} \right) = t$$

Switch sides.

$$t = \frac{7}{3} \cdot \log_2 \left( \frac{19 \cdot 5}{4} \right)$$

3. An exponential function  $f(x) = 0.223 \cdot e^{0.394x}$  is graphed below on a semi-log plot.



- a. Using the plot above, evaluate  $f(2.9)$ .

$$f(2.9) = 0.7$$

- b. Express  $f^{-1}(x)$ , the inverse of  $f$ .

$$f^{-1}(x) = \frac{1}{0.394} \cdot \ln\left(\frac{x}{0.223}\right)$$

- c. Using the plot above, evaluate  $f^{-1}(0.08)$ .

$$f^{-1}(0.08) = -2.6$$